

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Original) A permselective membrane assembly comprising a porous, graded particulate layer.
2. (Original) The permselective membrane assembly of claim 1 further comprising a porous support and a permselective membrane.
3. (Original) The permselective membrane assembly of claim 2 wherein the porous support is selected from the group consisting of alumina, titania, silica, zirconia, perovskites, spinels, pyrochlores, zeolites, stainless steel, and combinations thereof.
4. (Original) The permselective membrane assembly of claim 3 wherein the porous support comprises alumina.
5. (Original) The permselective membrane assembly of claim 2 wherein the permselective membrane is deposited by CVD.
6. (Original) The permselective membrane assembly of claim 2 wherein the permselective membrane comprises silica.
7. (Original) The permselective membrane assembly of claim 2 wherein the permselective

membrane comprises nanosil.

8. (Original) The permselective membrane assembly of claim 1 wherein the permeance to hydrogen gas is at least 1×10^{-7} mol/ m² s Pa and the hydrogen permselectivities with respect to carbon dioxide, carbon monoxide and methane are each at least 100.

9. (Original) The permselective membrane assembly of claim 1 wherein the permeance to hydrogen gas is at least 4×10^{-7} mol/ m² s Pa and the hydrogen permselectivities with respect to carbon dioxide, carbon monoxide and methane are each at least 1000.

10. (Original) The permselective membrane assembly of claim 1 wherein the porous, graded particulate layer is prepared from a plurality of sols having narrow particle size distributions.

11. (Original) The permselective membrane of claim 10 wherein a least one of the sols has an average particle size of greater than 500 nm and at least one of the sols has an average particle size less than 100 nm.

12. (Original) The permselective membrane of claim 10 wherein the plurality of sols are comprised of alumina particles.

13. (Original) A method for promoting the yield of a gaseous reaction product by selective permeation using a permselective membrane assembly comprising a porous, graded particulate layer.

14. (Original) The method of claim 13 wherein the gaseous reaction product is hydrogen.

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15-46. (Cancelled)

47. (new) The permselective membrane assembly of claim 1 wherein the porous, graded particulate layer is formed by dip-coating the support with a series of boehmite sols having decreasing particle size distributions.